

Abstract

Circadian rhythms affect all physiological processes in the body, including immune function. Circadian oscillations are observed in almost all components of the immune system. This oscillation generates molecular clocks that are in each cell and are synchronized by the main CSN pacemaker with help hormone secretion and neuronal innervation. As a result, the immune system is ready for increased responses to pathogens during the active phase when is higher risk of bruising with it.

Macrophages are cells of the natural immune system and main modulators of inflammation. Their activity, including cytokine production, phagocytosis and polarization to M1 and M2 phenotypes is closely linked to the molecular clock. This association between circadian and immune systems has implications for the course of a series of inflammatory diseases, such as arthritis and atherosclerosis.

The aim of this thesis is to investigate the effect of circadian system on macrophage function in inflammatory response.

Keywords:

circadian clocks, circadian genes, macrophage, melatonin, glucocorticoids